

IN THE CLAIMS:

- 1 1. (CANCELLED)
- 1 2. (CURRENTLY AMENDED) In an intermediate node of a data network, the data
2 network having one or more virtual local area networks (VLANs), the intermediate node
3 containing a forwarding database having one or more forwarding database entries, ~~and~~ a
4 method for controlling flooding of packets on a VLAN comprising the steps of:
5 referencing a media access control (MAC) limit database comprising one or more
6 MAC limit database entries wherein each entry is associated with a VLAN and contains a
7 MAC limit that indicates a number of forwarding database entries which are allowed to
8 ~~may be~~ associated with the VLAN, and a MAC count that indicates a number of forward-
9 ing database entries associated with the VLAN;
10 using the MAC limit database to determine if a MAC count associated with the
11 VLAN matches the MAC limit associated with the VLAN; and
12 if so, performing an action for controlling the flooding of packets on the VLAN.
13
- 1 3. (PREVIOUSLY PRESENTED) The method of claim 2, the step of using the MAC
2 limit database further comprising:
3 locating a MAC limit database entry associated with the VLAN; and
4 comparing the MAC count of the MAC limit database entry with the MAC limit
5 of the MAC limit database entry to determine if the number of forwarding database en-
6 tries associated with the VLAN matches the limit established for the VLAN.
- 1 4. (PREVIOUSLY PRESENTED) The method of claim 2, the step of using the MAC
2 limit database further comprising:
3 locating a MAC limit database entry associated with the VLAN;

4 comparing the MAC count of the MAC limit database entry with the MAC limit
5 of the MAC limit database entry to determine if the MAC count matches the MAC limit;
6 and
7 if not, updating the MAC count.

1 5. (CURRENTLY AMENDED) The method of claim 4, the step of performing an ac-
2 tion further comprising:
3 logging a message to a log accessible to the intermediate node.

1 6. (CURRENTLY AMENDED) The method of claim 4, the step of performing an ac-
2 tion further comprising:
3 disabling flooding for the VLAN.

1 7. (CURRENTLY AMENDED) The method of claim 4, the step of performing an ac-
2 tion further comprising:
3 disabling forwarding packets for the VLAN.

1 8. (CURRENTLY AMENDED) The method of claim 4, the step of performing an ac-
2 tion further comprising:
3 disabling learning for the VLAN.

1 9. (CURRENTLY AMENDED) In an intermediate node of a data network, the data net-
2 work having one or more virtual local area networks (VLANs), the intermediate node
3 containing a forwarding database having one or more forwarding database entries, a
4 method for controlling flooding of packets on a VLAN comprising the steps of:
5 establishing a limit that indicates a number of forwarding database entries that
6 may be allowed to be associated with the VLAN;
7 determining if a number of forwarding database entries associated with the VLAN
8 matches the limit established for the VLAN;

9 if so, shutting down the VLAN;
10 acquiring a packet associated with the VLAN;
11 determining if the VLAN is shut down; and
12 if so, dropping the packet.

1 | 10. (CURRENTLY AMENDED) The method of claim-~~1~~ 2, further comprising:
2 | acquiring a packet wherein the packet is associated with the VLAN;
3 | determining if the forwarding database contains an entry which contains a MAC
4 | address that matches a source address contained in the packet;
5 | if not, determining if learning is disabled for the VLAN; and
6 | if not, generating a forwarding database entry that contains the source address of
7 | the packet.

1 | 11. (CURRENTLY AMENDED) The method of claim-~~1~~ 2, further comprising:
2 | acquiring a packet associated with the VLAN;
3 | determining if the forwarding database contains an entry which contains a MAC
4 | address that matches a destination address contained in the packet;
5 | if not, determining if flooding is enabled for the VLAN; and
6 | if so, flooding the packet.

1 | 12. (CANCELLED)

1 | 13. (CURRENTLY AMENDED) An intermediate node coupled to a data network con-
2 | taining one or more VLANs, the intermediate node comprising:
3 | a forwarding database containing one or more entries wherein each entry is asso-
4 | ciated with a node accessible to the intermediate node and wherein each entry is associ-
5 | ated with a virtual local area network (VLAN);
6 | a media access control (MAC) limit database having one or more MAC limit da-
7 | tabase entries wherein each entry is associated with a VLAN and contains a MAC limit

8 | that indicates a number of forwarding database entries which ~~may~~ are allowed to be as-
9 | sociated with the VLAN and a MAC count that indicates a number of entries in the for-
10 | warding database associated with the VLAN; and

11 | a processor configured to, for each VLAN, (i) read a MAC limit associated with
12 | the VLAN from the MAC limit database, (ii) read a MAC count associated with the
13 | VLAN from the MAC limit database, (iii) determine if the MAC count associated with
14 | the VLAN matches the MAC limit associated with the VLAN, and (iv) if so, perform an
15 | action for controlling the flooding of packets on the VLAN.

1 | 14. (PREVIOUSLY PRESENTED) The intermediate node of claim 13 comprising:
2 | the processor further configured to, for each entry in the forwarding database,
3 | compare the MAC count with the MAC limit of the VLAN associated with the forward-
4 | ing database entry to determine if the MAC count matches the MAC limit.

1 | 15. (PREVIOUSLY PRESENTED) The intermediate node of claim 13 comprising:
2 | the processor further configured to update the MAC count if the MAC count does
3 | not match the MAC limit.

1 | 16. (CURRENTLY AMENDED) The intermediate node of claim ~~12~~13 further compris-
2 | ing:

3 | the processor configured to log a message to a log accessible to the intermediate
4 | node.

1 | 17. (CURRENTLY AMENDED) The intermediate node of claim ~~12~~13 further compris-
2 | ing:

3 | ~~the processor configured the action for controlling the flooding of packets is to~~
4 | disable flooding for the VLAN.

1 | 18. (CURRENTLY AMENDED) The intermediate node of claim 4213 further compris-
2 | ing:

3 | ~~the processor configured the action for controlling the flooding of packets is to~~
4 | disable forwarding packets for the VLAN.

1 | 19. (CURRENTLY AMENDED) The intermediate node of claim 4213 further compris-
2 | ing:

3 | ~~the processor configured the action for controlling the flooding of packets is to~~
4 | disable learning for the VLAN.

1 | 20. (CANCELLED)

1 | 21. (CURRENTLY AMENDED) A system comprising:

2 | means for referencing a media access control (MAC) limit database comprising
3 | one or more MAC limit database entries wherein each entry is associated with a VLAN
4 | and contains a MAC limit that indicates a number of forwarding database entries which
5 | ~~may are allowed to~~ be associated with the VLAN and a MAC count that indicates a num-
6 | ber of entries in the forwarding database associated with the VLAN;

7 | means for using the MAC limit database to determine if a MAC count associated
8 | with the VLAN matches the MAC limit associated with the VLAN; and

9 | means for performing an action for controlling the flooding of packets on the
10 | VLAN, if the MAC count associated with the VLAN matches the MAC limit associated
11 | with the VLAN.

1 | 22. (CURRENTLY AMENDED) A system comprising:

2 | means for establishing a limit wherein the limit indicates a number of entries
3 | which ~~may are allowed to~~ be contained in the forwarding database associated with the
4 | VLAN;

5 means for determining if a number of entries in the forwarding database associ-
6 ated with the VLAN matches the limit established for the VLAN;

7 means for performing an action for controlling the flooding of packets on the
8 VLAN, if the number of entries in the forwarding database associated with the VLAN
9 matches the limit established for the VLAN;

10 means for accessing an entry in the forwarding database associated with a VLAN;

11 means for comparing a MAC count with a MAC limit associated with the VLAN
12 to determine if the MAC count matches the MAC limit; and

13 means for updating the MAC count, if the MAC count does not match the MAC
14 limit.

1 23. (CANCELLED)

1 24. (PREVIOUSLY PRESENTED) A method for operating an intermediate network
2 node, comprising:

3 receiving a packet having a VLAN tag;

4 looking up a MAC destination address of the VLAN packet in a forwarding table;

5 looking up, in response to not finding the MAC destination address in the for-
6 warding table, a limit of MAC addresses (MAC limit) of the VLAN; and

7 performing an action for controlling flooding of packets on the VLAN in response
8 to a count of MAC addresses (MAC count) of the VLAN matching the MAC limit for the
9 VLAN.

1 25. (PREVIOUSLY PRESENTED) The method of claim 24, further comprising:

2 logging a message, as the action for controlling flooding on the VLAN.

1 26. (PREVIOUSLY PRESENTED) The method of claim 24, further comprising:

2 disabling flooding for the VLAN, as the action for controlling flooding on the
3 VLAN.

- 1 27. (PREVIOUSLY PRESENTED) The method of claim 24, further comprising:
2 disabling learning for the VLAN, as the action for controlling flooding on the
3 VLAN.
- 1 28. (PREVIOUSLY PRESENTED) The method of claim 24, further comprising:
2 shutting down the VLAN, as the action for controlling flooding on the VLAN.
- 1 29. (PREVIOUSLY PRESENTED) The method of claim 24, further comprising:
2 in response to receiving a VLAN packet for a shut down VLAN, dropping the
3 packet.
- 1 30. (PREVIOUSLY PRESENTED) The method of claim 24, further comprising:
2 in response to receiving a VLAN packet, looking up a MAC source address of the
3 VLAN packet in the forwarding table;
4 in response to not finding the MAC source address in the forwarding table, deter-
5 mining if learning is disabled for the VLAN; and
6 if learning is not disabled for the VLAN, generating a forwarding database entry
7 for the VLAN.
- 1 31. (PREVIOUSLY PRESENTED) The method of claim 24, further comprising:
2 in response to not finding the MAC destination in the forwarding table, determin-
3 ing if flooding is disabled;
4 if flooding is disabled, dropping the VLAN packet; and
5 if flooding is not disabled, flooding the VLAN packet out all ports except a re-
6 ceiving port.
- 1 32. (PREVIOUSLY PRESENTED) The method of claim 24, further comprising:
2 looking up the MAC limit for the VLAN in a MAC limit database.

1 33. (PREVIOUSLY PRESENTED) The method of claim 24, further comprising:
2 looking up the MAC count for the VLAN in a MAC limit database; and
3 in response to the MAC count not matching the MAC limit, updating the MAC
4 count in the MAC limit database.

1 34. (PREVIOUSLY PRESENTED) An intermediate network node coupled to a data
2 network containing one or more VLANs, the intermediate network node comprising:
3 means for receiving a packet having a VLAN tag;
4 means for looking up a MAC destination address of the VLAN packet in a for-
5 warding table;
6 means for looking up, in response to not finding the MAC destination address in
7 the forwarding table, a limit of MAC addresses (MAC limit) of the VLAN; and
8 means for performing an action for controlling flooding of packets on the VLAN
9 in response to a count of MAC addresses (MAC count) of the VLAN matching the MAC
10 limit for the VLAN.

1 35. (PREVIOUSLY PRESENTED) The intermediate network node of claim 34, further
2 comprising:
3 means for logging a message, as the action for controlling flooding on the VLAN.

1 36. (PREVIOUSLY PRESENTED) The intermediate network node of claim 34, further
2 comprising:
3 means for disabling flooding for the VLAN, as the action for controlling flooding
4 on the VLAN.

1 37. (PREVIOUSLY PRESENTED) The intermediate network node of claim 34, further
2 comprising:
3 means for disabling learning for the VLAN, as the action for controlling flooding
4 on the VLAN.

1 38. (PREVIOUSLY PRESENTED) The intermediate network node of claim 34, further
2 comprising:
3 means for shutting down the VLAN, as the action for controlling flooding on the
4 VLAN.

1 39. (PREVIOUSLY PRESENTED) The intermediate network node of claim 34, further
2 comprising:
3 means for in response to receiving a VLAN packet for a shut down VLAN, drop-
4 ping the packet.

1 40. (CURRENTLY AMENDED) The intermediate network node of claim 34, further
2 comprising:
3 ~~in response to receiving a VLAN packet,~~ means for looking up a MAC source ad-
4 dress of the VLAN packet in the forwarding table in response to receiving a VLAN
5 packet;
6 ~~in response to not finding the MAC source address in the forwarding table,~~ means
7 for determining if learning is disabled for the VLAN in response to not finding the MAC
8 source address in the forwarding table; and
9 ~~if learning is not disabled for the VLAN,~~ means for generating a forwarding data-
10 base entry for the VLAN if learning is not disabled for the VLAN.

1 41. (CURRENTLY AMENDED) The intermediate network node of claim 34, further
2 comprising:
3 ~~in response to not finding the MAC destination in the forwarding table,~~ means for
4 determining if flooding is disabled in response to not finding the MAC destination in the
5 forwarding table;
6 ~~if flooding is disabled,~~ means for dropping the VLAN packet if flooding is dis-
7 abled; and

8 | ~~if flooding is not disabled~~, means for flooding the VLAN packet out all ports ex-
9 | cept a receiving port if flooding is not disabled.

1 | 42. (CURRENTLY AMENDED) The intermediate network node of claim 34, further
2 | comprising:

3 | means for looking up the MAC limit for the VLAN in a MAC limit database.

1 | 43. (CURRENTLY AMENDED) The ~~method~~intermediate network node of claim 34,
2 | further comprising:

3 | means for looking up the MAC count for the VLAN in a MAC limit database;

4 | and

5 | ~~in response to the MAC count not matching the MAC limit~~, means for updating
6 | the MAC count in the MAC limit database in response to the MAC count not matching
7 | the MAC limit.

1 | 44. (CURRENTLY AMENDED) An intermediate network node coupled to a data net-
2 | work containing one or more VLANs, the intermediate network node comprising:

3 | one or more line cards configured to receive VLAN packets;

4 | a forwarding database configured to store one or more MAC destination address
5 | associated with one or more VLANs;

6 | a media access control (MAC) limit database configured to store one or more
7 | MAC limit database entries, each MAC limit database entry associated with a VLAN and
8 | containings a limit of MAC addresses (MAC limit) for the VLAN and a count of MAC
9 | addresses of the VLAN; and

10 | a processor configured to perform an action for controlling flooding of packets on
11 | a VLAN in response to the MAC count of the VLAN matching the MAC limit for the
12 | VLAN.

1 45. (PREVIOUSLY PRESENTED) The intermediate network node of claim 44, further
2 comprising:

3 the processor configured to log a message, as the action for controlling flooding
4 on the VLAN.

1 46. (PREVIOUSLY PRESENTED) The intermediate network node of claim 44, further
2 comprising:

3 the processor configured to disable flooding for the VLAN, as the action for con-
4 trolling flooding on the VLAN.

1 47. (PREVIOUSLY PRESENTED) The intermediate network node of claim 44, further
2 comprising:

3 the processor configured to disable learning for the VLAN, as the action for con-
4 trolling flooding on the VLAN.

1 48. (PREVIOUSLY PRESENTED) The intermediate network node of claim 44, further
2 comprising:

3 the processor configured to shut down the VLAN, as the action for controlling
4 flooding on the VLAN.

1 49. (PREVIOUSLY PRESENTED) The intermediate network node of claim 44, further
2 comprising:

3 the processor configured to drop a VLAN packet, in response to receiving the
4 VLAN packet for a shutdown VLAN.

1 50. (PREVIOUSLY PRESENTED) The intermediate network node of claim 44, further
2 comprising:

3 the processor configured to look up a MAC source address of a VLAN packet in
4 the forwarding table;

5 the processor configured to determine if learning is disabled for the VLAN, in re-
6 sponse to not finding the MAC source address of the VLAN in the forwarding table; and
7 the processor configured to generate a forwarding database entry for the VLAN, if
8 learning is not disabled for the VLAN.

1 51. (PREVIOUSLY PRESENTED) The intermediate network node of claim 44, further
2 comprising:

3 the processor configured to determine if flooding is disabled for a VLAN, in re-
4 sponse to not finding a MAC destination for a VLAN packet in the forwarding table;
5 the processor configured to drop the VLAN packet, if flooding is disabled; and
6 the process configured to flood the VLAN packet out all ports except a receiving
7 port, if flooding is not disabled.

1 52. (PREVIOUSLY PRESENTED) The intermediate network node of claim 44, further
2 comprising:

3 the processor configured to look up a MAC limit for a VLAN in the MAC limit
4 database.

1 53. (PREVIOUSLY PRESENTED) The method of claim 44, further comprising:

2 the processor configured to look up a MAC count for a VLAN in the MAC limit
3 database; and

4 the processor configured to update the MAC count in the MAC limit database, in
5 response to the MAC count not matching the MAC limit.

1 54. (CURRENTLY AMENDED) A computer readable media, comprising:

2 the computer readable media containing instructions for operating an intermediate
3 network node for ~~the practice of the method of~~,
4 receiving a packet having a VLAN tag;
5 looking up a MAC destination address of the VLAN packet in a forwarding table;

6 looking up, in response to not finding the MAC destination address in the for-
7 warding table, a limit of MAC addresses (MAC limit) of the VLAN; and
8 performing an action for controlling flooding of packets on the VLAN in response
9 to a count of MAC addresses (MAC count) of the VLAN matching the MAC limit for the
10 VLAN.